

Appl. No. 10/603,973
Docket No. 9070MXL
Amdt. dated 7/21/06
Reply to Office Action mailed on 3/27/06
Customer No. 27752

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A method for reducing the level of asparagine in coffee beans, comprising adding an asparagine-reducing enzyme to coffee beans.
2. (Original) The method of claim 1, wherein said asparagine-reducing enzyme is asparaginase.
3. (Original) The method of claim 1, wherein the level of asparagine is reduced by at least about 10%.
4. (Original) The method of claim 1, wherein said asparagine-reducing enzyme is an enzyme capable of hydrolyzing the amide group of free asparagine.
5. (Original) A method for reducing the level of asparagine in coffee beans, comprising:
 - (1) providing coffee beans containing asparagine;
 - (2) optionally pre-treating the coffee beans;
 - (3) adding an asparagine-reducing enzyme to the coffee beans;
 - (4) allowing a sufficient time for the enzyme to react with the asparagine; and
 - (5) optionally deactivating or optionally removing the enzyme.
6. (Original) Coffee beans comprising less than about 500 ppm asparagine.
7. (Original) Coffee beans comprising less than about 300 ppm asparagine.
8. (Original) Coffee beans comprising less than about 200 ppm asparagine.
9. (Original) Coffee beans comprising less than about 100 ppm asparagine.

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10-13. Cancelled

14. (Original) A method for reducing the level of acrylamide in roasted coffee beans, comprising:

- (1) providing coffee beans containing asparagine;
- (2) optionally pre-treating the coffee beans;
- (3) adding an asparagine-reducing enzyme to the coffee beans;
- (4) allowing a sufficient time for the enzyme to react with the asparagine;
- (5) optionally deactivating or optionally removing the enzyme; and
- (6) roasting the coffee beans to form roasted coffee beans.

15. (Currently Amended) Treated coffee beans, wherein the level of asparagine in said coffee beans is reduced by at least about 10% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

16. (Currently Amended) The coffee beans of claim 15, wherein the level of asparagine in said coffee beans is reduced by at least about 30% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

17. (Currently Amended) The coffee beans of claim 16, wherein the level of asparagine in said coffee beans is reduced by at least about 50% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

18. (Currently Amended) The coffee beans of claim 17, wherein the level of asparagine in said coffee beans is reduced by at least about 70% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

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19. (Currently Amended) The coffee beans of claim 18, wherein the level of asparagine in said coffee beans is reduced by at least about 90% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

20. (Currently Amended) ~~Treated~~ Roasted coffee beans, wherein the level of acrylamide in said roasted coffee beans is reduced by at least about 10% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

21. (Currently Amended) The roasted coffee beans of claim 20, wherein the level of acrylamide in said roasted coffee beans is reduced by at least about 30% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

22. (Currently Amended) The roasted coffee beans of claim 21, wherein the level of acrylamide in said roasted coffee beans is reduced by at least about 50% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

23. (Currently Amended) The roasted coffee beans of claim 22, wherein the level of acrylamide in said roasted coffee beans is reduced by at least about 70% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

24. (Currently Amended) The roasted coffee beans of claim 23, wherein the level of acrylamide in said roasted coffee beans is reduced by at least about 90% when compared to conventionally processed coffee beans as a control sample, wherein the control sample

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is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added .

25. (Original) Roasted coffee beans comprising less than about 160 ppb acrylamide.

26. (Original) Roasted coffee beans comprising less than about 150 ppb acrylamide.

27. (Original) Roasted coffee beans comprising less than about 135 ppb acrylamide.

28. (Original) Roasted coffee beans comprising less than about 120 ppb acrylamide.

29. (Original) Roasted coffee beans comprising less than about 100 ppb acrylamide.

30. (Original) Roasted coffee beans comprising less than about 50 ppb acrylamide.

31. (Original) Roasted coffee beans comprising less than about 20 ppb acrylamide.

32. (Original) Roasted coffee beans comprising less than about 10 ppb acrylamide.

33. (Currently Amended) A product comprising treated roasted coffee beans, wherein the level of acrylamide in said product is reduced by at least about 10% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added .

34. (Currently Amended) The product of claim 33, wherein the level of acrylamide in said product is reduced by at least about 30% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

35. (Currently Amended) The product of claim 34, wherein the level of acrylamide in said product is reduced by at least about 50% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added .

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36. (Currently Amended) The product of claim 35, wherein the level of acrylamide in said product is reduced by at least about 70% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

37. (Currently Amended) The product of claim 36, wherein the level of acrylamide in said product is reduced by at least about 90% when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

38. (Currently Amended) The product of claim 33, wherein said product is roasted coffee beans when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

39. (Currently Amended) The product of claim 38, wherein said product is roast and ground coffee when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added.

40. (Original) Roast and ground coffee, wherein said roast and ground coffee comprises less than about 160 ppb acrylamide.

41. (Original) Roast and ground coffee, wherein said roast and ground coffee comprises less than about 150 ppb acrylamide.

42. (Original) Roast and ground coffee, wherein said roast and ground coffee comprises less than about 135 ppb acrylamide.

43. (Original) Roast and ground coffee, wherein said roast and ground coffee comprises less than about 120 ppb acrylamide.

44. (Original) Roast and ground coffee, wherein said roast and ground coffee comprises less than about 100 ppb acrylamide.

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45. (Original) Roast and ground coffee, wherein said roast and ground coffee comprises less than about 50 ppb acrylamide.

46. (Original) Roast and ground coffee, wherein said roast and ground coffee comprises less than about 20 ppb acrylamide.

47. (Original) Roast and ground coffee, wherein said roast and ground coffee comprises less than about 10 ppb acrylamide.

48. (Original) A roast and ground coffee brew, wherein said roast and ground coffee brew comprises less than about 7 ppb acrylamide.

49. (Original) A roast and ground coffee brew, wherein said roast and ground coffee brew comprises less than about 5 ppb acrylamide.

50. (Currently Amended) An article of commerce comprising:

(a) a product comprising treated roasted coffee beans, wherein said roasted coffee beans have a reduced level of acrylamide when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added;

(b) a container for containing the product; and

(c) a message associated with the container.

wherein said message associated with the container informs the consumer that the product has a reduced level of acrylamide.

51. (Original) The article of claim 50, wherein said message informs the consumer that the product is low in acrylamide.

52. (Currently Amended) An article of commerce comprising:

(a) a product comprising treated coffee beans, wherein said coffee beans have a reduced level of asparagines when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in

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exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added;

- (b) a container for containing the product; and
- (c) a message associated with the container.

wherein said message associated with the container informs the consumer that the coffee beans contain a reduced level of asparagine.

53. (Original) The article of claim 52, wherein said message informs the consumer that the coffee beans are low in asparagine.

54. (Currently Amended) . An article of commerce comprising:

- (a) a product comprising treated roasted coffee beans, wherein said roasted coffee beans have a reduced level of acrylamide when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added;

- (b) a container for containing the product; and
- (c) a message associated with the container.

wherein said message associated with the container informs the consumer that the article of commerce has a reduced level of acrylamide.

55. (Original) The article of claim 54, wherein said message informs the consumer that the article of commerce is low in acrylamide.

56. (Original) An article of commerce comprising:

- (a) a product comprising treated coffee beans, wherein said coffee beans have a reduced level of asparagines when compared to conventionally processed coffee beans as a control sample, wherein the control sample is prepared in exactly the same manner as the enzyme-treated sample, with the exception that enzyme is not added;

- (b) a container for containing the product; and
- (c) a message associated with the container.

wherein said message associated with the container informs the consumer that the article of commerce contains a reduced level of asparagine.

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57. (Original) The article of claim 56, wherein said message informs the consumer that the article of commerce is low in asparagine.

58. (New) A method for reducing the level of acrylamide in coffee beans which comprise soluble materials and asparagine using an asparaginase-reducing enzyme, said method comprising the step of extracting at least a portion of asparagine from said coffee beans to form an extract, contacting said extract with said enzyme for a sufficient amount of time to reduce the level of asparagine at least about 10%, as compared with a control sample prepared in exactly the same manner as the enzyme-treated sample with the exception that said enzyme is not added, and adding back at least a portion of said extract comprising said soluble materials to at least a portion of said coffee beans, followed by roasting said beans.

59. (New) A method according to Claim 58 which employs a dominant bath comprising said enzyme, whereby soluble materials in said beans, with the exception of said asparagine, do not continue to extract out of said beans, once equilibrium has been reached.

60. (New) A method for reducing the level of asparagine in coffee beans by:

- a) steaming the beans to open the pores, followed by;
- b) soaking the beans from step (a) in an asparagine-reducing enzyme solution, whereby the level of asparagine in said beans is reduced at least 10%, as compared with a control sample prepared in exactly the same manner as the enzyme-treated sample, with the exception that said enzyme is not used in step (b).